

## Pediatric Cardiology

### GW25-e2373

#### Effect of different dose aspirin on coronary artery lesions in the acute phase of Kawasaki disease

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**Objectives:** To study the effect of different dose aspirin on coronary artery lesions in the acute phase of Kawasaki disease.

**Methods:** 142 children with primary Kawasaki disease in our hospital, from January 2010 to December 2013, were divided into two groups, A, B. 65 children were in group A. In acute phase, they were given large dose of gamma globulin (IVIG); within 24 hours after treatment, they were given oral ASA 30-50 mg/kg/d, which was gradually reduced to 5mg/kg/d after normal temperature; 77 children were in A group. Of acute application of they were given large dose of gamma globulin (IVIG), at the same time, given oral ASA 30-50mg/kg/d, which was gradually reduced to 5 mg/kg/d. All of children were given IVIG 1 g/kg/d, for 2days, in 5-9 days.

**Results:** There were 15 children (13.4%) have CAL within 1 month in total. 2 cases (3.1%) were from group A, whose coronary artery diameters were less than 4mm; 13 cases (16.9%) were from group B, and 11 cases of whom coronary artery diameter less than 4mm; 2 cases in 4-8mm. The variable ratio of coronary artery lesion in group A and group B was 3.1%:16.9% (P=0.008).

**Conclusions:** As the treatment of Kawasaki disease in acute stage, taken ASA after being given high dose IVIG can reduce the incidence of CAL, compared with the ones who taken ASA and IVIG at the same time.

### GW25-e3355

#### Artesunate enhances the efficacy of amiodarone for cardioversion of paroxysmal supraventricular tachycardia

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**Objectives:** To compared the safety and efficacy of Artesunate (ART) added to amiodarone vs. amiodarone alone for children with paroxysmal supraventricular tachycardia (PSVT).

**Methods:** 34 children with PSVT aged 1 to 14 years were recruited and randomly assigned into experimental group (n=16) or control group. (n=18). Patients of control group received amiodarone infusion (loading dose 5 mg/kg followed by maintenance dose of 10-15mg/kg/d, n=16), experimental group received amiodarone infusion at the same dosage plus a single dose of ART 1.5 mg /kg, n=15). All patients were treated with oxygen inhalation, ECG monitoring, sedative treatment according to the condition of patients. 3 patients with spontaneous cardioversion were excluded. The plasma natriuretic polypeptide (ANP) and cardiac index (CI) were measured before, during, and after tachycardias occurred.

**Results:** Patients in the amiodarone plus artesunate group compared with the amiodarone-only group showed significantly higher cardioversion rate at 24 h (80.6% vs. 75.8%, respectively; P=0.01), and shorter time to cardioversion (800.2 ± 50.4 seconds vs. 980.8 ± 90.2 seconds; P=0.001). The plasma natriuretic polypeptide (ANP) and cardiac index (CI) returned to normal after treatment in both the groups, whereas ANP and CI were still higher than normal among patients with unsuccessful cardioversion.

**Conclusions:** Addition of artesunate to amiodarone was safe and well tolerated in this research, and it demonstrated efficacy superior to amiodarone alone for conversion of PSVT. ART can be employed as a new therapy strategy for many patients.

### GW25-e3195

#### Clinical analysis of allergic purpura with cardiac damage

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**Objectives:** Allergic purpura (Henoch-Schonlein purpura, HSP) is the most common vasculitis in the small blood vessels as the main pathological changes in childhood. The main clinical manifestations of HSP include rash, gastrointestinal symptoms, joint pain, kidney damage, other damage may also occur in heart, brain, liver, pancreas, lungs and other organs. The majority of cases present benign self-limiting process, but severe cases can be life-threatening. This study aimed to investigate the incidence, clinical features, diagnosis and prognosis of HSP with heart damage.

**Methods:** We collected 210 cases of children diagnosed with HSP enrolled in our hospital during January 2011 to August 2013. It is about 113 boys, aged 4-14 years (average age : 7.8 years), 97 girls, aged 3-14 years (average age : 6.2 years), and based on clinical manifestations, divided into 31 cases of simple skin type, 41 cases of joint type, 37 cases of abdominal type, 16 cases of renal type, 85 cases of mixed type. Count up the children with the changes of myocardial enzymes including creatine

kinase isoenzyme, troponin, myoglobin change, ECG, echocardiography, and get rid of children with a history of heart disease, such as myocarditis, cardiomyopathy, arrhythmia, congenital heart disease and other structural heart disease.

**Results:** 210 cases of HSP patients are with 46 cases (21.9%) cardiac damage, including 1 case of skin type (3.2%), 5 cases of joint type (12.2%), 8 cases of abdominal type (21.6%), 4 cases of renal type (25%), 28 cases of mixed type (32.9%). 46 cases with cardiac damage include abnormal myocardial enzymes (9 cases), ECG abnormalities (35 cases), sinus bradycardia (15 cases), atrioventricular block (9 cases), ST-T changes (6 cases), premature (5 cases), Echocardiography (left ventricular diameter increases) abnormal (1 case). After the treatment of anti-allergy, improving circulation, providing nutrition to myocardial, 41 patients with cardiac damage return to normal.

**Conclusions:** Heart damage in HSP patients can often occur in mixed type, followed by abdominal type and kidney type. The more severe the disease is, the greater the chance of cardiac involvement. ECG abnormalities is the most common heart damage, including sinus bradycardia and atrioventricular block. To strengthen the clinical importance of HSP with cardiac damage, to give the early diagnosis and aggressive treatment, most cases can get good prognosis.

### GW25-e2358

#### Tachycardia induced cardiomyopathy in children: a report of 20 cases

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**Objectives:** Explor the clinical characteristics, therapeutic regimen and outcome of TIC in children of different ages.

**Methods:** 20 children with TIC, from the First Hospital of Jilin University from January 2007 to November 2013, were retrospectively analyzed the clinical manifestations, auxiliary examination, treatment, follow-up.

**Results:** Of 20 cases of TIC, from 16 days to 15 years old, 13 cases of male and female 7 cases (the difference was statistically significant). 11 were in infancy (male/female=7:4), 1 was in toddler period (female), 4 were in pre-school age (male), 4 were adolescence (male/female=3:1). Arrhythmia types in infancy were atrial tachycardia (AT) in 7 cases, paroxysmal supraventricular tachycardia (PSVT) in 3 cases, ventricular tachycardia (VT) in 1 case. All cases in toddler period and pre-school age were AT. In adolescence 2 cases were AT and 2 were PSVT. All patients in infancy, toddler period and pre-school age were treated with drugs first. All infancy cases restored sinus rhythm. 1 toddler case obtained ventricular rate control. In pre-school age 1 case restored sinus rhythm and 2 cases obtained ventricular rate control, 1 case failing to drugs underwent radiofrequency ablation and get cured. 1 case in adolescence obtained ventricular rate control with drugs, another three patients underwent radiofrequency ablation after admission and all got cured.

**Conclusions:** TIC was more common in infancy, pre-school age and adolescence. AT was the dominant arrhythmia type and followed by PSVT. Drug therapy was preferred for children with TIC and infancy patients responded best to drugs. Radiofrequency ablation was an alternative for pre-school and adolescent patients who failed to drug therapy.

## Cardiovascular Surgery

### GW25-e5229

#### Robotic Cardiac Surgery in China: 7-year Single-center Experience and Follow-up

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**Objectives:** This article aims to summarize the experience of 700 cases of robotic cardiac surgery with 7-year follow-up results revealed.

**Methods:** A total of 700 patients underwent robotic cardiac surgery using da Vinci Surgical System from January 2007 to May 2014 in PLA General Hospital. There were 429 male and 271 female with a median age of 49 years old (11-80). With left port approach, 240 cases of robotic coronary artery bypass graft were completed, including totally endoscopic coronary artery bypass graft on beating heart (BH-TECAB, n=100) and minimally invasive direct coronary artery bypass graft on beating heart (MIDCAB, n=140). The patients with multiple-vessels coronary artery disease received PCI after robotic coronary surgery in separate session (hybrid coronary bypass revascularization, n=35) to achieve complete revascularization. The graft patency was evaluated by CTA or coronary angiography before discharge, at 3, 6, 12 months, and up to 5 years postoperatively. With right port approach, atrial septal defect repair on arrest or beating heart (n=180), ventricular septal defect repair (n=25), mitral valve plasty (n=100), mitral valve replacement (n=50), atrial myxoma resection (n=50), were completed under cardiopulmonary bypass with cannulation in femoral artery, femoral vein and right internal jugular vein. Patients were followed up to obtain clinical and echocardiographic status at 6 month, 1 year, 3 years and 5 years postoperatively.

**Results:** The same console and patient-side surgeon performed all operations. No operative mortality or serious surgical complications were observed. Operating time was shortened significantly for all procedures with considerable learning curve. One patient was converted median sternotomy to aortic perforation, and one patient had hemolyses after mitral valve repair. Two patients had conversions to a mini-thoracotomy in BH-TECAB group. During the follow-up of  $40.9 \pm 16.5$  (1~86) months, no residual shunt, peri-valvular leaks, tumor recurrence occurred. The quality of life outcomes within the 30 days after surgery were excellent. All the patient who accepted robotic coronary surgery underwent CTA or coronary angiography before discharge. And either method showed 100% graft patency. The graft patency was 98.1% at 1 year postoperatively and 97.8% at 2 years. And no more graft occlusion was found at 3 to 5 years. No patient died of major adverse cardiac and cerebral events in the follow-up period.

**Conclusions:** Our study shows that cardiac surgery with the assistance of robotic technology is safe. The outcomes of robotic heart surgery and follow up results are excellent for selected patients.

#### GW25-e0772

##### **Risk Factors Of Postoperative Mortality Of Ruptured Abdominal Aortic Aneurysms**

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**Objectives:** Despite significant improvements in surgery, anesthesia, and post-operative critical care, the postoperative mortality rate of ruptured abdominal aortic aneurysm (RAAA) has remained at a high level for several decades. Therefore, we analyze the risk factors associated with the postoperative mortality of RAAA.

**Methods:** From January 1980 to May 2013, the clinical data of 85 patients who underwent open repair of RAAA were analyzed retrospectively. The risk factors were categorized into disease related and surgery related groups, and analyzed by both univariate and multivariate methods.

**Results:** The 3-day and the 30-day mortality rates were 18.7% and 35.8%, respectively. On univariate analysis, age, time interval from disease onset to admission, combined with coronary heart disease or chronic obstructive pulmonary disease, cardiac arrest, duration of shock for the 3-day mortality and systolic pressure, time interval from the emergency room (ER) to operation room (OR), operative time, aortic clamping time and hemorrhage volume for the 30-day mortality were statistically significant. On multivariate analysis, age, combined with coronary heart disease, cardiac arrest for the 3-day mortality and time interval from ER to OR, operative time, hemorrhage volume for the 30-day mortality were statistically significant.

**Conclusions:** To increase the survival rate of RAAA, timely diagnosis and prompt operative control of bleeding for prevention of massive hemorrhage are important.

#### GW25-e2263

##### **Study the Correlation between Evaluation of Cerebrovascular Function by 320 Dynamic Volume CT and Neurological Complications after Off-pump Coronary Artery Bypass Graft**

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**Objectives:** To investigate neurological complication (NC) and its risk factors after off-pump coronary artery bypass grafting (OPCABG), and study 320 dynamic volume CT evaluation of cerebrovascular function in relevance to OPCABG postoperative NC.

**Methods:** (1) 813 cases are collected from August 2010 to September 2013 in the Beijing Anzhen Hospital. (2) Record patients general condition, medical history before the surgery. (3) Patients did 320 dynamic volume CT and were evaluated cerebrovascular function, including 320 dynamic volume CT scan, computed tomography angiography (CTA) and computed tomography angiography perfusion (CTP) before the operation. (4) Before the surgery, we evaluated patients with nervous system function with the National Institute of Health Stroke Scale (NIHSS), cognitive function with the Mini Mental State Examination (MMSE) and the Montreal Cognitive Assessment (MoCA), anxiety with the Hamilton Anxiety Scale (HAMA) and depress with the Hamilton Depression Scale (HAMD). (5) 7 days after operation, we evaluated patients with nervous system function, cognitive function, anxiety and depress again. (6) According to whether NC, patients were divided into the case group (190) and control group (623) and analysis of risk factors of NC after OPCABG. (7) Explore the relationship between 320 dynamic volume CT evaluation of cerebrovascular function and postoperative NC.

**Results:** (1) Postoperative NC morbidity was 23.4% (190/813), among them, the incidence of cerebral infarction was 4.7% (9/190), hypoxic ischemia encephalopathy (HIE) was 10.0% (19/190), delirium was 6.3% (12/190), postoperative cognitive dysfunction (POCD) was 55.3% (105/190), anxiety and depression was 35.3% (67/190). (2) Case group's age, previous cerebrovascular disease history, diabetes, the severe stenosis of extracranial carotid arteries, the severe stenosis of CTA and abnormal CTP were significantly higher than the control group ( $P < 0.05$ ). (3) Logistic regression analysis showed that the male (OR 1.816, 95% CI 1.017-3.244,  $P=0.044$ ), cerebrovascular disease history (OR 1.837, 95% CI 1.075-3.141,  $P=0.026$ ) and CTP abnormalities (OR 3.224, 95% CI 2.073-5.013,  $P=0.000$ ) were independent risk factors for postoperative NC. (4) The rate of occipital lobe CBF, the difference of

temporal lobe, occipital lobe and basal ganglia region TTP and the difference of occipital lobe and basal ganglia region MTT of cases were significantly higher than the control group ( $P < 0.05$ ). The area of temporal lobe TTP difference under the ROC curve was 0.606.

**Conclusions:** The morbidity of NC after OPCABG was 23.4%. Male, cerebrovascular disease history and CTP abnormalities were independent risk factors for NC after OPCABG. The CTP parameters of the temporal lobe TTP difference forecasted postoperative NC more accurate than other cerebral perfusion parameters.

#### GW25-e5390

##### **Bleeding and clinical impacts of Pre-clopidogrel exposure in patients undergoing off pump coronary artery bypass: Is there an earlier cut off date?**

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**Objectives:** Patients undergoing surgical revascularization with exposure to clopidogrel have an increased risk of bleeding complications and subsequent requirement of blood product transfusions. Off-pump coronary artery bypass surgery (OPCAB) has shown benefits of a lower hemorrhagic occurrence. The purpose of this study is to investigate the bleeding, perioperative ischemic events and long term outcomes of patients undergoing OPCAB with perioperative exposure to clopidogrel. This study is also aimed at finding a possible earlier cut-off date for performing OPCAB while maintaining a balance between a shorter waiting time against the increased risk of bleeding.

**Methods:** A total of 931 patients included in the study were divided into two groups. Group A includes the 549 patients who received clopidogrel within 7 days before the off-pump CABG surgery. Group B included the remaining 382 patients who received clopidogrel more than 7 days or were clopidogrel naïve. Major bleeding rate of each consecutive date from group A was compared with group B to identify the cutoff date after which the bleeding risk is no longer significant. Day 4 was identified as the cutoff date and group A was then further divided into Day 1-4 (A1) and Day 5-7 (A2). A propensity score matched comparison was performed between group A1 and group B, group A2 and group B. The primary endpoints of this study were major bleeding, reoperation, post-operative multiple types of blood transfusions. Secondary endpoints of this study were ischemic events (acute myocardial infarction, ischemic stroke), and in hospital and 1 year mortality.

**Results:** Propensity matched analysis showed that patients undergoing OPCAB within 4 days of clopidogrel discontinuation (Group A1) were at a 2.481 fold risk of major bleeding (95% CI 1.619-3.84,  $P=0.000$ ) and 1.996 fold risk of post operative multiple type blood transfusion (95% CI 1.460-2.729,  $P=0.000$ ), patients undergoing OPCAB within 5-7 days of clopidogrel discontinuation (Group A2) were not at higher risk of major bleeding (95% CI 0.858-2.047,  $P=0.205$ ) in comparison with Group B. Compared with group B, reoperation rates were only higher in Group A1 (3.9% vs. 1.3%,  $P=0.027$ ). Group A1, baseline HCT, weight, systolic blood pressure with surgical duration were predictors for major bleeding. Ischemic events and 1 year mortality showed no difference between the groups.

**Conclusions:** Surgical revascularization after at least 4 days of discontinuing clopidogrel is recommended to avoid further increased risk of bleeding and shorten the waiting time for patients undergoing OPCAB.

#### GW25-e4320

##### **A prospective randomized controlled study on Median sternotomy closure with titanium plate fixation in high risk patients**

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**Objectives:** Median sternotomy remains the preferred technique for access in open heart surgery. Conventional standard for sternal closure remains fixation with 5-11 stainless steel wires. This may sometimes put too much mechanical stress on the wires, leading to wire movement or fracture, sternal instability, mal-union or non-union, and even complicated sternal wound infection and mediastinitis. We studied the sternal closure with titanium plate fixation in high-risk patients to see if it could prevent sternal dehiscence and offer cost-effectiveness.

**Methods:** Our prospective, randomized, controlled study enrolled the open cardiac surgery patients who were admitted in the Guangdong Provincial Cardiovascular Institute from January 2010 to December 2013. Two hundred patients who were determined preoperatively to be at high risk were randomly assigned to sternal closure with rigid plate fixation (Group R, n=100) or wire cerclage controlled group (Group C, n=100). High risk factor including insulin-dependent mellitus diabetes, obesity, immunosuppression, chronic obstructive pulmonary disease, sternal osteoporosis, irradiation of the operated area, use of bilateral internal thoracic arteries as bypass grafts, decreased or increased body mass and renal failure. Statistical calculations were based on sternal fixation, wound healing, development of infection, sternal healing and long-term follow-up. Age and risk factors of two groups has no difference.

**Results:** The Group R and the Group C of non healing wounds was significantly different (2%&12%,  $P=0.007$ ). Non-healing wounds were observed in 2 patients in